APPENDIX A.

(Reported in 58 U. S. P. Q. 293)

IN THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE NINTH CIRCUIT

VITAMIN TECHNOLOGISTS, INC., a corporation, *Appellant*, vs. WISCONSIN ALUMNI RESEARCH FOUNDATION, a corporation, *Appellee*.	No. 10,079
WISCONSIN ALUMNI RESEARCH FOUNDATION, a corporation, *Appellant*, vs. VITAMIN TECHNOLOGISTS, INC., and H. F. B. ROESSLER, *Appellees*.	Jun. 30, 1943

Upon Appeals from the District Court of the United States for the Southern District of California, Central Division.

Before: DENMAN, STEPHENS and HEALY, Circuit Judges.

DENMAN, Circuit Judge:

Appellant, hereinafter called Vitamin, appeals from an interlocutory judgment of the district court holding valid and infringed the patents of one Steenbock, Nos. 1,680,818, 1,871,136, and 2,057,399, hereinafter called the First, Second and Third Patents, respectively. The patent rights were acquired by appellee, Wisconsin Alumni Research Foundation, hereinafter called Foundation.

The patents have to do with a process of producing from foods of man and other animals and birds, Vitamin D valuable in the prevention and cure of rickets, by subjecting the

food to radiation of the ultra-violet rays such as are produced by a quartz mercury vapor lamp.

Our consideration of the claims of the First Patent disposes of all the contentions raised on the appeals. Steenbock's granted application for the First Patent states

> "What I regard as new, and desire to secure by Letters Patent, is:
>
> "1. The process of imparting antirachitic properties to organic substances of dietary value (for example carbohydrate foods, fats, oils, protein foods, or composite foods), which comprises subjecting the same to the action of ultra-violet rays, such as are produced by a quartz mercury vapour lamp, for a period sufficient to effect antirachitic activation but so limited as to avoid subsequent substantial injury to the antirachitic principle."[1]

Primarily it is to be noted that the claim applies to all ultra-violet rays. It is not confined to such rays as are produced by a particular medium, such as the quartz lamp. It includes, of course, the ultra-violet rays of the sun.

Many years before the application, science had discovered that the sun's rays shining on cut alfalfa hay cured in the

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[1]The other claims are

"2. The process set forth in claim 1 as applied to oils and fats containing unsaponifiable lipoids.

"3. The process set forth in claim 1 as applied to naturally liquid glycerides.

"4. The process set forth in claim 1 as applied to olive oil.

"5. Naturally deficient (in the antirachitic factor) food substance antirachitically activated in accordance with the process set forth in claim 1.

"6. The naturally deficient (in the antirachitic factor) liquid glycerides containing constituents antirachitically activated in accordance with the process set forth in claim 1.

"7. Olive oil antirachitically activated in accordance with the process set forth in claim 1.

"8. The process of imparting antirachitic properties to organic substances of dietary value (for example carbohydrate foods, fats, oils, protein foods, or composite foods), which comprises subjecting the same to the action of ultra-violet rays, such as are produced by a quartz mercury vapour lamp, for a period sufficient to effect antirachitic activation but so limited as to avoid subsequent substantial injury to either the antirachitis principle or the palatability."

field was an antirachitic food for pigs. Prior to 1923, Foundation's expert witness, Dr. Nelson, testified that it was shown as a natural process that vegetable matter, not only cut hay but copra, the cut meat of the cocoanut, when exposed to the sun's ultra-violet rays produced the antirachitic substance later called Vitamin D. Dr. Nelson also stated that the long prior process of exposing milk to ultra-violet rays would produce in it Vitamin D. Steenbock himself verified the facts concerning alfalfa by the discovery that when cured out of the sunlight it lacked the antirachitic quality created when cured in the field.

We thus have the claimed inventor proving that it is from the ultra-violet rays of the sun that the alfalfa acquires its Vitamin D, that is, by the process claimed by him as patentable. If the patent be valid, it is thus seen that the farmer is an infringer when he exposes his cut alfalfa to the ultra-violet rays of the sun long enough to make it antirachitic. So also the long previously established practice of the radiation of milk by the mercury vapor lamp would infringe the monopoly of Steenbock's patent because, admittedly, in its customary use it would produce in the milk Vitamin D.

Steenbock had been preceded by the discovery by Hume and Smith of the fact that rats, made rachitic for the purposes of scientific study, had their condition improved when placed in a cage with a floor of sawdust into which the ultra-violet rays had been radiated from a mercury vapor quartz lamp. They thought the radiation of the air the cause of the improvement. Steenbock discovered the improvement was caused by the antirachitic quality of the sawdust eaten by the rats. He did not invent a method but merely discovered what happened in the prior known process.

Steenbock was long preceded by the discovery that rickets in human beings was aided or cured by exposure of the human skin to these ultra-violet rays of the sun or lamp. From Steenbock we know that what the process did is the activation with the rays of the antirachitic substance in fatty flesh under the skin—that is, in a sense, stored food—which substance is carried by the blood stream to the bone-forming agencies of the body. So also Goldblatt and Soames discovered that ultra-violet radiation from the quartz mer-

cury vapor lamp on rachitic rats produced in them livers which when fed to other rachitic rats aided or cured their rickets. Steenbock's discovery shows that what this method of applying the rays did was to produce Vitamin D in the rats' livers, but the method already had produced the Vitamin D.

The district court found that the First Patent

> "* * * covers a process employing an artificial activating agency in such a manner as to accomplish what the natural agency does not and cannot do. * * *."

and that

> "24. Nature, unaided by man, does not and cannot antirachitically activate foods or medicines. * * *."

In this the district court erred. Vitamin D is produced by the ultra-violet rays of the sun penetrating vegetable matter, whether cut by wind or falling to the ground or by man in immemorial agricultural practice. It also was for a long time produced in food by ultra-violet lamp rays. Dr. Steenbock invented nothing in the way of mechanical or chemical processes.

Dr. Steenbock's great contribution to science and to human needs was his more exact *recognition* of what had transpired in all these prior practical uses of the ultra-violet rays in producing the then unnamed Vitamin D in food substances.

The clear vision of such a scientific investigator as Dr. Steenbock well may create a vastly higher indebtedness from the world of human beings than owed to the inventors of mechanisms and processes to whom his vision is the inspiration. However our Congress as yet has provided no system of reward to the pure scientist, while it has to the inventor for his processes and mechanisms. Steenbock's valuable scientific certitudes are discoveries, but they are not inventions within the meaning of the term "invention" as used by the Congress in its patent laws. This court so determined in one of the able opinions of District Judge Hawley in Wall v. Leck, 66 Fed. 552 (CCA-9).

In that case invention was claimed in the discovery that a known process of applying hydrocyanic gas to fruit trees by conducting it to and into a canvas container enveloping the trees to destroy certain damaging insects, would be economically successful if applied at night when the sun's rays could not reach the gas. When applied in the daytime the insects were killed but the effect of combining the sun's rays with the gas was to injure the tree.

As with the long prior use of the lamps to project ultraviolet rays on food substances, here was the prior use of the apparatus of the canvas bag. There was nothing but the discovery that the sun's rays combining with the hydrocyanic gas was the reason for the difficulty in obtaining economically successful results in a prior use. In holding invalid the claimed patent, this court said (pp. 555-558),

> "But in this connection we are brought back to the fact that appellants in their letters patent only pointed out the way by the use of a natural condition of nature's laws. *They did not invent any new process, chemical or otherwise, whereby the force of nature was to be controlled.* * * * Their discovery, which is conceded to be valuable and of great benefit, was that the old process of fumigating trees by means of an oiled tent and hydrocyanic acid gas, both of which were old and free to the public, could be made successful 'provided the fumigation is done at night.' [Steenbock did not even do this much.] * * * Such a discovery, however new and valuable it may be, is not within the pale of patentable inventions. It does not come within any of the principles of the patent law, or any of the provisions of the statute relating to patents. A mere naked principle, a law of nature, or property of matter cannot be patented. So long as the principle is a mere item of knowledge, and sometimes from its nature it must always remain such, no patent can be held valid, however brilliant and useful the discovery may be. * * *
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> "* * * No natural function of the day or of the night, of the sun or of the moon, is patentable. These na-

tural conditions are as free to all mankind as is the air we breathe. The broad canopy of heaven can be used in the daytime, or the night-time, and at all times, in sunshine or in darkness, by everybody, in the presence or the absence of any rays of light, or any condition of the atmosphere. *A principle, considered as a natural physical force, is not the product of inventive skill. It is the common property of all mankind. It exists in nature independently of human effort, and can neither be diminished nor increased by human power.* [Steenbock has not diminished nor increased anything. He used the same lamp and process Hume and Smith and Goldblatt and Soames used and produced the same antirachitic factor.] *Man can discover and employ it, but his employment of it in the modes or through the instrumentalities by which it is applied in nature is a mere imitation of what every man is able to perceive and reproduce as well as he. All endeavors to confine it to himself are at once futile and unjust. It exists for all men, as well after his discovery as before. The laws necessarily recognize and protect this right, and do not permit any man to exclusively use the conditions which are the gifts of nature, simply because he was the first one to discover its value.* [Steenbock was not the first to discover the value of irradiation by ultra-violet rays. The value of sun irradiation and activation was established; the value of sun or artificial irradiation of man and animal was established; and the value of irradiation of other materials had been established.] Not until some *new instrument or method* is contrived for its direction towards ends which it cannot naturally accomplish does his creative genius manifest itself. * * *" (Emphasis supplied.)

Holding similarly with reference to monopolizing natural processes, the Court of Patent Appeals said

> "As the court views the matter, nothing inventive over the prior art is disclosed in this application. As a result of the researches of the applicants, an ex-

planation had been made of certain *natural* reactions which have been known to the art to occur, *but which were imperfectly understood. This does not, however, amount to invention.* In re Langdon, 77 F. 2d 920, 22 C. C. P. A. (Patents) 1245." (Emphasis supplied.)

In re Boyd, 90 F. 2d 130, 132.

Apart from the First Patent's attempt to monopolize a natural process, this court has held that it is a well established principle that if a process is disclosed in the prior art, a patent whose validity is attacked is anticipated even though the prior patent failed to state and the inventor did not know that his invention brought the process into operation. In Celite Corporation v. Dicalite Co., 96 F. 2d 242, 248 (CCA-9), we stated

"* * * In answer to appellant's contention that the purpose of the North process was simply to remove organic matter and bleach the product, it is sufficient to state that, as the patented process in suit was disclosed by the North patent, it was anticipated by that process even though it be assumed that the North patent failed to state, and that North did not know of the increased flow rate of the product produced * * *."

We hold that the First Patent is invalid because it was old in the art to expose various foods of dietary value, such as olive oil and milk, to lamp radiated ultra-violet rays, and ages old to expose cut vegetable matter to such rays of the sun.

The same reasoning makes invalid the Second Patent which claims patentable the process of applying the ultra-violet rays to fatty material, whereby the unsaponifiable portions are activated and Vitamin D produced. The first claim of the Second Patent, typical of the others, is

"1. The process of producing a concentrated anti-rachitically activated substance from substances rich

> in unsaponifiable lipoids, which comprises separation and irradiation of said unsaponifiable lipoids, such irradiation being effected by subjecting the lipoids, before or after separation, to the action of ultra violet rays, such as emanate from a quartz mercury vapor lamp for a period sufficient to effect antirachitic activation, but so limited as to avoid subsequent substantial injury to the antirachitic principle."

No new process of treatment of the lipoids was described. Vitamin D had been produced in many of the lipoids by the application's methods long before the patentee's application was filed. All that was done by him, important and valuable as it may be, was the discovery that in these prior processes Vitamin D had been created.

The Third Patent is confined to the production of Vitamin D from yeast. Its first and typical claim is

> "1. The process of producing an antirachitically activated product which comprises: subjecting yeast to the action of light comprising ultra-violet rays for a period sufficient to effect substantial antirachitic activation of the yeast."

The First Patent makes a similar claim for all food materials. Whether yeast enters the human body when directly eaten or eaten in bread, we regard it as one of the foods covered by the claim of the First Patent and hence the Third Patent is void for a double attempt to patent an unpatentable process.

The appeal of Vitamin is sustained as to all three patents.

Foundation cross-appealed from the judgment holding that cross-appellee Roessler had not infringed any of the patents. Since the patents are invalid, he could not have infringed them.

The judgment is reversed as to the appeal of Vitamin and affirmed as to the cross-appeal of Foundation.

HEALY, C. J. Concurring

However plain may be the applicable principles of the patent law, the subject matter of this suit is itself extremely complex; and any layman must feel a natural hesitancy in making pronouncements in respect of it. It is only too easy for him to misunderstand or to oversimplify. I do not doubt that Dr. Steenbock must be accounted a pioneer in his special field, namely, the artificial activation of vitamin D in foods. His researches illuminated some very dark places and brought about a clearer understanding of a natural phenomenon that before his time was seen as through a glass, darkly.

But I agree that Dr. Steenbock did not invent anything. The antirachitic properties of the vitamin D principle were well known, if imperfectly understood, prior to Steenbock. It had been recognized that these properties are present naturally and abundantly in many organic substances, notably in cod-liver oil. Vitamin D had also been produced in an artificial way by a process of irradiating living tissues with the mercury vapour lamp. As early as 1919 Huldschinsky had found that rickets could be cured by exposure of the patient to the ultra-violet rays of that lamp. Use of the lamp for activating vitamin D in inert substances, as distinguished from the activation of the principle in the living tissue of the patient himself, may possibly be another matter; and what is claimed for Dr. Steenbock is that he discovered or invented a process for the activation of the vitamin in edible substances through employment of this lamp, or similar available apparatus.

I do not read the claims of his patents as broadly as the main opinion does; and for the purpose of the discussion I

have assumed, also, that the activation of living tissues by exposing the subject to the ultra-violet rays of the mercury vapour lamp is a different process from that Steenbock is said to have invented. The validity of the later assumption is questionable. The one thing that can certainly be attributed to Steenbock is the conception—a truly remarkable conception in the then state of knowledge—that the artificial irradiation of certain foods with ultra-violet light confers upon the food the power of preventing the occurrence of rickets, or, to put it another way, produces vitamin D.

But recognition is not invention. In the use of this artificial process Dr. Steenbock was substantially anticipated. In 1923 Hume and Smith published a paper giving an account of their experiments with rats which had been rendered rachitic by placing them on a diet deficient in fat-soluble vitamins. The experiments were conducted in this manner: The rats were put in glass jars containing sawdust at the bottom. The animals were later removed from the jars, and the jars placed below a mercury vapour quartz lamp so that the light shone directly down into them. After ten minutes these containers were covered with glass lids and were moved, whereupon the rats were put back in the jars and the covers temporarily replaced to hinder diffusion of the air. Thereafter the animals showed marked improvement in growth and weight, a result attributed by Hume and Smith to the irradiation of the air in the containers.

Dr. Steenbock was familiar with this experiment. After studies and experiments of his own he became convinced that the improvement in the condition of the rats was attributable, not to the irradiation of the air, but to the irradiation and consequent activation of the sawdust, which is edible to rats. In other words, Dr. Steenbock accurately

interpreted the results of Hume and Smith's experiments, the significance of which the latter themselves totally failed to comprehend.

In the same year Goldblatt and Soames published an account of another experiment, with which, also, Steenbock was familiar. They irradiated live rats with a quartz mercury vapour lamp, after which the livers were removed and fed to rachitic rats, with resultant marked improvement in growth. Thus by these scientists as well as by Hume and Smith the actual process of irradiating edible substances with the mercury vapour lamp had already been publicly practiced. I think, therefore, that Steenbock can not fairly be said to be the originator of the process. His contribution to the art lies, rather, in his interpretation of the results achieved by the process.

But Steenbock's patents, as the court has observed, are subject to an infirmity more fundamental still. Ultra-violet light is a natural form of energy which man may isolate or control, but which he can not create. Like the sun, which is the source of that energy, and like the air we breathe, ultra-violet rays are the property of all mankind. Men may devise or improve machines for their more effective utilization and may obtain patents upon the machine or the improvement. But it would be a monstrous thing if the energy itself or its use could in any way be made the subject of a monopoly. Sunlight, by its own inherent process, activates the vitamin D principle in organic substances, albeit apparently not in all of them. The intervention of the mercury vapour lamp may adapt this process to wider fields, but in a patentable sense the process itself is as ancient as the sun.

(Endorsed): Opinion and Concurring Opinion. Filed Jun. 30, 1943. Paul P. O'Brien, Clerk.